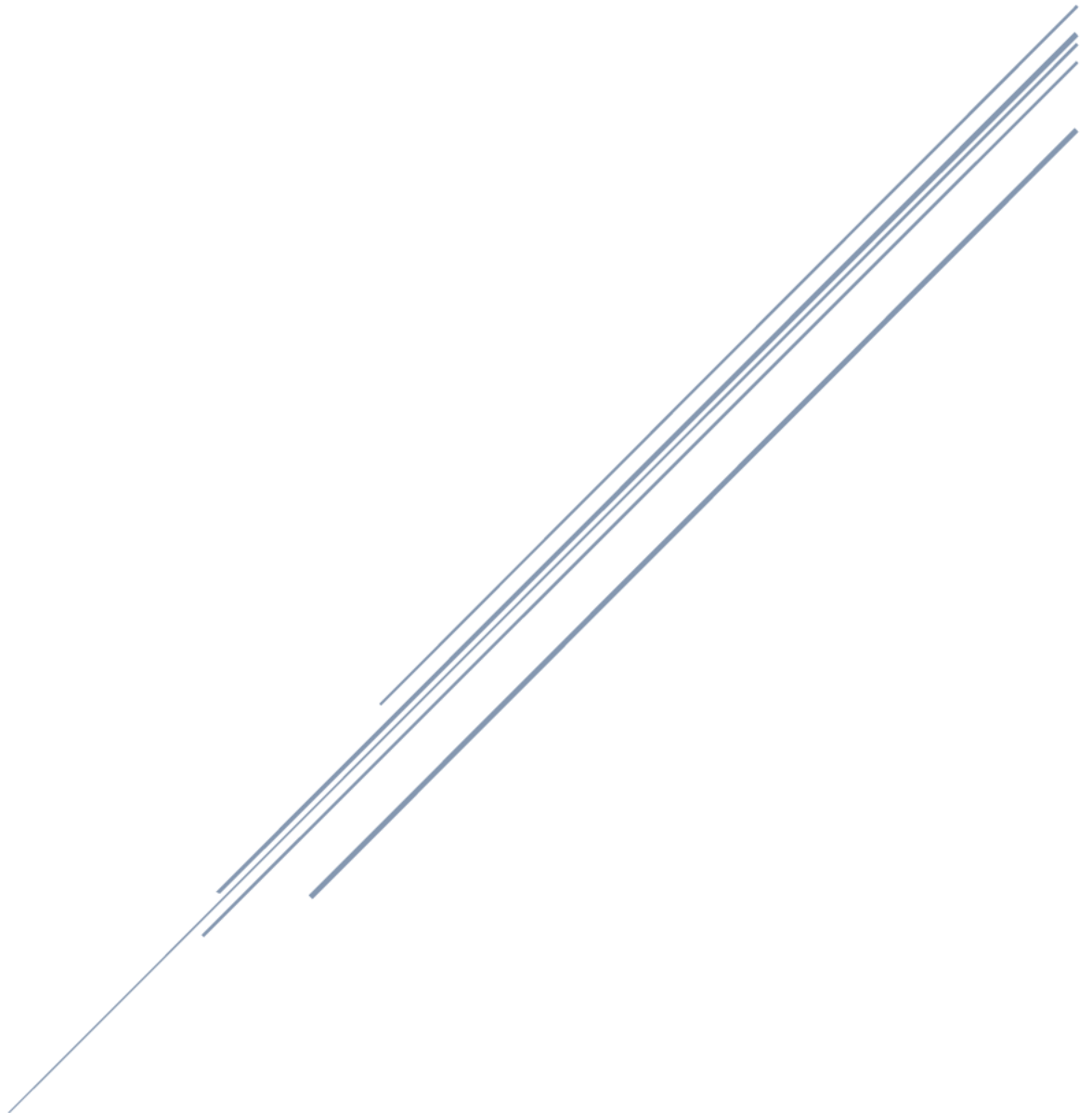


EXPLORING FOOD WASTE IN THE DAIRY INDUSTRY, THE INFLUENCE OF DATE LABELLING AND PACKAGING ON FOOD WASTE, AND WHAT BRANDS LIKE CLOVER DO TO REDUCE FOOD WASTE.

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Abstract

This research study addresses food wastage in the dairy industry and the challenges that consumers face when it comes to the understanding of date labeling. The study also looks into packaging as the potential contributor to dairy products being wasted within households. The study also highlights what the Clover brand, well known within the dairy industry, is doing when it comes to food wastage and what sort of educational and marketing strategies have they applied to help the address the food waste problem. This study gains insights into whether or not consumers are satisfied with the way dairy producers are labeling the products and educating them on the actual shelf life of various dairy products, or do they think the responsibility lies with them as consumers to educate themselves and prevent food waste. The sample size included 10 participants, female and male, that reside in Johannesburg. The age ranged from 25 to 45, and all were working individuals with buying power. The data collection method used was in the form of focus group and the data collected was recorded and reflected in the form of narrative and graphical data. The study highlights the confidence that consumers have on their understanding of date labels, however, there's signs of doubt as most asked for producers to do educational campaigns around date labels. The evidence drawn in this research is in line with previous literature on the prevalence food waste due to date labels and packaging. What it also highlights, is that the lack of education by producers to help consumers. The research study concludes by suggesting what brands like Clover can do to be more impactful in the lives of their consumers and help in the fight against food wastage, what sort of approaches can be followed to help achieve the more meaningful brand status.

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Packaging and its influence on food wastage

1. Introduction

This research assignment will be analysing the extent of food waste in the context of the dairy industry in South Africa. Dairy products provide many consumers with an array of health dietary choices, however, they are one of the food products in many households that spoil and get thrown out. The way these products are processed, stored and handled may affect their safety and quality. That is why it's important to know how to store them well and understand the guidelines on labels.

Generally, dairy products are pasteurised to remove bacteria and make them safe to consume. Following the pasteurisation stage, it is important for these products to be kept under constant refrigeration to avoid the growth of harmful bacteria. It's for this very reason that it is important that consumers take precaution when it comes to dairy products.

Dairy is said to be in the top five of foods wasted in most countries (Venter, 2017). So, what is a well-known brand like Clover (as stated in various Brand Icon Benchmark Surveys by City Press & Rapport) doing to alleviate food waste particularly at household level through education of consumers on when it's safe and not safe to consume dairy products?

The South African government has reworked laws and introduced new legislations to support companies with their waste management and it has pledged to halve food waste by 2030 (WWF, 2017). The South African government is a signatory to the United Nations Sustainable Development. However, for this goal to be met, over and above what companies are doing to reduce food waste at production stages, it is important to also realise that society also plays an important role in solving the problem. There is a great need for innovative ways from both companies to address production related wastage as well as consumer related wastage. Researchers have also indicated that household should be the key focus when it comes to tackling food waste as most of the wastage happening at that level is preventable wastage. Date labelling is said to be one of the most critical areas that need focus as consumers confuse the meaning.

From the various studies reviewed, there is a big gap in the research that shows clearly if whether consumers understand these dates or not and if they are satisfied with the education by producers around these dates. However, there is a few research papers that have attempted to look into the challenge with date labelling and have called for consumer education to be at the forefront in trying to reduce waste at household level. Research by Van Der Merwe and Venter (2010), showed the important of addressing the challenge of lack of understanding of food label information among consumers and said that this will have to be done in a two-step process. A priority should be placed on consumer education, especially in a country

such as South Africa where the absence of consumer education exposes consumers to misinterpretation of labels (Van Der Merwe & Venter, 2010). Regulating authorities received the second spot light and research indicated that they need to strive towards instructing labelling regulations that require a simpler format for label information that consumers can better understand (Van Der Merwe & Venter, 2010).

Although there are studies that have made such a conclusion, the effects of packaging and expiration dates on food wastage have also not been exhausted as a research area, and specifically looking at a product such as dairy that most consumers are sensitive towards. This study specifically scrutinises consumer behaviour when it comes to expiration dates on dairy products.

The study also addresses producer conduct on this subject. What efforts have been put in place to assist consumers in understating these guideline date.

Research will also analyse the effect of innovative communication mediums such as social networking sites to educate consumers on the actual shelf life of certain products beyond the guidelines provided on the packages.

It is evident that objective knowledge is a possible tool to improve consumers' ability to use and interpret date labels (Graham-Rowe, Jessop & Sparks, 2014), and this can help in mitigating unnecessary food wastage.

If it is believed that addressing consumers' knowledge, which influences procurement and consumption of dairy products, could result in the mitigation of future wastage, then it is important to gather evidence that consumers are indeed unclear on these date labelling. In so doing, this will prompt the Clover brand and other dairy producers to take consumer education seriously and be meaningful brands. To clearly map out the meaning of these dates and assist households to waste less.

In short, the aim of this research is to explore reasons why there is such a high prevalence of food wastage at household level when it comes to dairy products specifically. There is ample research pointing to packaging and date labels as being the main culprit for wastage. However, is it packaging quality, lack of understanding of food expiry guidelines, or both?

This research will also look to identify what role the producers can play, if they aren't playing it already, in alleviating the challenge that consumers have when it comes to labeling and understanding of dates of their favourite products. The research will identify what the Clover brand has done thus far to help curb food waste and look at what can still be done to improve the wastage statistics.

2. Background

Food wastage is, and has been for years, a global problem that many countries are still battling to address. Meanwhile, even though not accurately measured, food waste levels seem to be continuing to increase. Before we look to understand and analyse food wastage in the context of South Africa specifically, the paper will address the definition of the term itself. Food waste is any food, and inedible parts of food, removed from the food supply chain to be recovered or disposed (Östergren, Gustavsson, Bos-Brouwers, Timmermans, Hansen, Møller, Anderson, O'Connor, Soethoudt and Qusted. 2014).

The negative effect that comes with food waste is the impact on food security, food production and distribution resources as well as environmental impact (Ritchie, 2020).

There are no accurate estimates of the extent of food wastage, however, studies indicate that at least 30 percent of all food is wasted globally (FAO, 2015). This amounts to 1.3 billion tons per year.

According to the World Resources Institute (WRI) analysis based on data in Global Food Losses and Food Waste (FAO, 2011), the Sub-Saharan Africa region accounts for 23% of global food wastage. Of this, much of the wastage happens at production and handling and storage. This is waste that occurs before products reach consumers. In the case of dairy, there is waste that occurs in the form of milk spillage at production plants which most producers strongly focus on as it can be hazardous to the environment. And because dairy is such a sensitive product, storage is important even before packaging, if not stored at the right temperature, it will spoil, resulting in waste. However, for the research paper, the focus is specifically on household waste and how that contributes the whole food wastage problem.

In South Africa, roughly 12.6 million tons of food is wasted annually (Nahman & de Lange, 2015). And it is believed that of that food, at least 10.2 million tons is avoidable or edible portions equating to about 27% of available food, while 2.4 million tons can be classified as unavoidable wastage.

If you put a monetary value for food wasted, it is estimated to be valued at R61.5 billion annually of edible food waste throughout value chain (Nahman & de Lange, 2015). This is slightly over 2% of the gross domestic product of the country.

The major difference between the Sub-Saharan Africa region and developed regions is that food wastage in developing countries primarily occurs at an early stage in the food value chain, while in developed countries, wastage occurs mostly at the retail and consumption stages (FAO, 2015).

Despite being ranked among the developing countries, South Africa household food waste behaviour mimics that of developed countries (Oelofse, Muswema & Ramukhwatho, 2018).

In Europe and North America, consumers waste about 95 – 115kg per year, while in Sub-Saharan Africa and South/Southeast Asia the figures stand at 6 – 11 kg per year (Oelofse et al., 2018). However, looking to corroborate the statement about that South Africa consumers are more similar to developed countries, according to a 2018 study by Oelofse, food waste from households in Ekurhuleni was 25 198 tons per annum which equates to 8kg per capita per annum (Oelofse et al., 2018). And food waste from households in Johannesburg showed a 51 462 tons per annum outcome that is 12kg per capita per annum (Oelofse et al., 2018).

In South Africa, a per capita food waste is approximately 210 kg per person per year, assuming the average population was 48.6 million in 2007–2009 (DAFF, 2012).

Reasons for waste as reported in the study by Oelofse (2018), range from the understanding of sell-by and expiry dates guidelines, product appearance (old or off or rotten or smells bad) and food that has been forgotten in storage. Other reason for household food spoiling include packaging that can't be resealed therefore providing poor protection, preparing too much food, slow consumption, pests, buying too much, picky eaters as well as poor cooking skills (Oelofse et al., 2018).

The top five food products wasted in households include, vegetable, fruit, bread, dairy, and cakes and pastries (Venter, 2017). This was according to a research done in Gauteng with a sample size of 1154 households. At least 42% of vegetables get thrown out week on a weekly basis, 22% of fruits, 21% dairy, 14% convenience food, and only 1% meat (Cronje, 2018).

With most dairy products, "sell-by" and "use-by" dates are the reason consumers throw away food.

While there some consumers that do understand that the "best before" "sell-by" and "used-by" dates are more of a quality indicator than confirmation that food is off, they do still tend to discard food that passed or is near these date (Wilson, 2017). What's noted to be the reason for this is that consumers may have extreme concerns over their health in relation to the quality of food they eat as they believe that it's not healthy to eat food closer to its expiry date. This perception is, to a large extent, misled by the food industry's overemphasis on the importance of food freshness attributes in consumption (Aschemann-Witzel, 2016).

Since the research is focusing on the dairy industry, it will also look at what Clover brand, has done in terms of consumer education. The brand has been seen to be running campaigns promoting freshness "Freshaaa is Bestaaaa". It's natural for consumers to only want fresh. However, how much education is going into educating consumers on the actual shelf life of products? Is the date on the label the only indicator of freshness? And when marking the "sell-by" "use-by" dates, are they in a place very visible for consumers to see, in that way they don't forget to consume products they have bought. Or, is there a disclaimer to inform consumers that these dates are only indicators of quality level of product.

Clover is one of South Africa's iconic brands specialising in dairy products and has been in existence for over 100 years. It has a wide range of dairy products across the segments – milk, cheese, butter, cream, etc. A brand with such a rich history has a potential to influence consumers and change their attitude towards household wastage. The next section we assess the extent of food waste at household level and what has been done thus far to improve the situation.

3. Description of the research topic

Exploring food waste in the dairy industry and looking at the Clover brand. What influence does packaging and date labelling have on food waste?

This study aims to investigate food wastage within the dairy industry but focusing closely at household waste. Dairy is one of the top five foods wasted (Venter, 2017). And it is understood that with most of the wasted products, the misinterpretation of date labeling "sell by" "use by" dates on food labels are the reason consumers throw away food and subsequently contribute to food wastage (Venter, 2017). Of all the foods, dairy is one of the food categories whereby these dates matter most to consumers (Zielińska, Bilska, Marciniak-Łukasiak, Łepecka, Trząskowska, Neffe-Skocińska, Tomaszewska, Szydłowska, and Kołożyn-Krajewska, 2020). There is great fear to eat dairy products that have either gone over the use by date, even it's by a day or two, and or even products that are just a day or two out to reaching the set date. The study aims to understand the degree in which date labelling is a challenge for consumers as well as what need to be done to address it.

3.1 Problem statement

Consumers are wasting dairy products due to misinterpretation of date labelling and the inability to always view the labeling on the food packages.

Date labelling refers to an indicative system that lets retailers review the shelf life of the product when it comes to optimum quality for stock rotation purposes (FMI and GMA, 2007; NIST, 2013; Newsome, Balestrini, Baum, Corby, Fisher, Goodburn & Yiannas, 2014). Date labelling is generally determined by the manufacturer, it is found on perishable and non-perishable products, and is only put there as a safety margin and not a fixed value, meaning that it can vary from time to time (Gunders, 2012; Industries, 2012; Prinsloo, van der Merwe, Bosman & Erasmus, 2012).

The misinterpretation is that most consumers believe that dates shown on products are fixed and the food can't be consumed at all after the date.

According to Gunders (2012), these dates are used as an indicator and more often than not, most products are still okay to consume even after the date, however, consumers don't know this.

This research will aim to address this as what has been observed and interpreted by most researchers is that consumers lack knowledge of date labelling.

Below are the research questions that will be focused on to try address the problem of food waste when it comes to dairy products. These questions are design specifically to understand consumers' view on the date labeling and how they use and throw away their dairy products. And what they think producers or brands could be doing to better the food wastage problem.

3.1.1 Questions for the research

Question 1: Is there enough consumer education around food expiry guidelines, looking at dairy industry specifically?

Question 2: Is Clover viewed as a meaningful brand by looking to address household food waste and educating it customers to avoid throwing away edible food?

3.1.2 Research objectives

For question 1:

- To explore consumer knowledge, broadly, on household food waste levels. Do they know how this contribute to the bigger global problem of food waste?
- To explore reasons why consumers discard dairy products in their households.
- To explore their knowledge around food safety guidelines on dairy products. Do they understand the difference and how do they apply these guidelines on their dairy products?

For question 2:

- To explore the waste management in the dairy industry but looking specifically into Clover.
- To assess if Clover fits the meaningful brand criteria.
- To explore Clover's effort in being a meaningful brand by assessing wastage of dairy products at household level. The meaningful brand criteria will be used to assess this.

4. Literature review

The goal of this literature review is to compile existing knowledge regarding how date and storage labels are used by consumers in their food assessment activities.

In the recent past, the issue of consumer food waste caused by packaging has been receiving attention across the world. However, the relationship between food waste and packaging is still marginally understood (Wohner, 2019). According to Wikström (Wikström, 2016), the environmental effect of packaging concerning food waste can be divided into two categories: the direct effect, which is optimisation of packaging attributes such as volumes, materials and mechanisms; and the indirect effect, which are reliant on consumer behaviour. While most of the existing studies focus on measuring and reducing the direct environmental impact of packaging, the question of how these packaging attributes might influence consumer household food consumption and waste behavior has rarely been explored (Aschemann-Witzel, 2015).

When looking at the indirect impact of packaging, date and storage information features play a substantial role in a consumer's decision of whether to eat or discard food (Parfitt, 2010).

Consequently, date and storage labeling have become one of the major factors that dominate packaging-related household food waste (Lyndhurst, 2011).

There is a lot of research showing that a considerable amount of food waste occurs when consumers and sellers dispose of expired food despite it being safe to eat.

Food waste is the disposal by the consumer or food seller of foods that are seen as to be rather undesirable when compared to foods that have not reached their sell by dates and still look fresh (Aschemann-Witzel, de Hooge, Amani, Bech-Larsen, & Oostindjer, 2015).

Research that was conducted in South Africa (Pretoria), date labelling was noted as the third most important reason for food waste by the residents from the Mamelodi Township, Pretoria (Ramukhwatho, Du Plessis, & Oelofse, 2014). According to WRAP (2011) report, levels of consumer understanding and their use of date labels in decision making regarding food waste, indicates widespread consumer confusion. In addition, literature suggest label dates on food are generally not regulated and do not indicate food safety (Gunders, 2012).

What is evident from available literature, is that best-before date labels are not related to food safety but are used by food manufacturers to indicate peak quality. Even after the best-before date has passed, provided it was handled and stored correctly, a product ought to be safe to consume, and be wholesome and of good quality (USDA-FSIS, 2011).

Consumers' lack of understanding or confusion when it comes to date labelling may have an effect in household food waste and this also feeds back into the decisions of food sellers, who would also remove food products from their shelves two to three days before the expiration date (Gunders, 2012).

There have been a few literatures calling for consumer education to help alleviate consumer related food waste, and for experiments and interventions that will look into effective messaging strategies, that examine viral approaches, and that target consumer perceptions of sub-optimal foods (ReFED, 2016).

Results from a study by Wilson (Wilson; Rickard; Saputo & Ho, 2017) are consistent with other studies which indicate that consumers have a negative view of food quality approaching the expiration date. Easy access to food and reliance on the date of minimum durability printed on the label may prompt consumers to dispose of food after it has expired (Godfray, 2010).

On the other hand, it should be taken into account that some consumers do not check the dates on the packaging or consciously consume food after the "best before" date (Thomas, 2010). At the same time, there is a lack of objective data on the quality of products and their safety beyond the expiration date.

Another study reported high level of awareness of food labels and highlighted that some consumer actually prefer food items that have food labels. However, understanding of the food label doesn't come with ease and was reported very less. Multisectoral involvement, such as public health, social welfare, food and agriculture department in education the public as well as regulating the food manufacturers, is needed (Jain, Gomathi & Kar, 2018).

According to Toma (2017), there is a stronger need for clearer labelling of food, as they are in the habit of checking information on packaging and are more likely to understand the limitations of the current date labelling. There is a need for information as this will lead to stronger behavioural control which will drive better interpretation of labels and ultimately, lower food waste (Toma, 2017).

Another study also concluded that when consumers were told about a link between date labels, food waste, and the effect this has on the environment, participants were suddenly willing to pay for expired food, particularly frozen or recently expired semi-perishable products (Collart, 2018).

From reviewing of information available, most of the wastage can be avoided. As a country, we are grappling with a problem that can be lessened somewhat if producers focus attention to consumer education around product shelf life, package them better to allow for proper resealing in between use, and clearly mark these dates and their definitions on packages. Reducing wastage within households will require a collective effort, consumers need to change their behaviour and producers need to create product packaging that is fit to address food wastage. Household food waste can be minimised through proper guidance.

Improvements on the current labeling communication system could prove to be the most cost-effective measure to reduce consumer food waste. Enhancements on date labeling specifically would not only bring the greatest economic value in terms of food waste reduction on the consumer side but would also need the lowest cost on the business practice side. In other words, this inconsequential invention in date and storage labeling can enable deep changes in consumer food waste behaviour. Therefore, despite the original intention of helping the consumer make a more informed choice in their food consumption, nowadays, date and storage labeling has also been assigned the role of remedying household food waste.

There have not been enough studies completed within the South African context regarding motives for food wastage among families. However, preceding research performed in the US observed that date labelling does have an influence on food waste practices (Lyndhurst, 2011; Newsome et al., 2014).

For years the American shopper has been taught to mind the kind of expiration dates they see on their food products, yet available literature shows that more than 80% of Americans misinterpret date labels and throw meals away in advance, under the misconception that it's important to guard their families' wellbeing. This research will explore the South African perspective of this.

It is noted that this is a global phenomenon, most consumers misinterpret date labels, thus resulting in premature and unnecessary food wastage (Newsome et al., 2014). A study done by the Waste and Resource Action Programme (WRAP, 2011) on date labelling done in the United Kingdom showed that 45-49% of consumers don't understand the meaning of date labelling, and this is causing a massive amount of food being thrown out while still edible. According to the report, an estimated 20% of household food waste is associated to date labelling confusion among consumers (WRAP, 2011). Food waste is rated among the top three food issues of concern to the public, and is ranking above food safety (Gunders, 2012).

In one of the very few South African focused studies by Venter (2017), it was found that when it comes to consumers' knowledge of date labeling, the results showed that there was slight over confidence among consumers (subjective knowledge). According to Klerck and Sweeney (2007), there are two types of knowledge that are known: subjective knowledge, which talks to an individual's perception of the level of information that they have stored in their memory regarding a product class (Brucks, 1985), for example, what consumers think a use-by date is. While objective knowledge relates to the real level of accurate information that is deposited in an individual's memory (Brucks, 1985), for example, the definition for a use-by date there's only a right or wrong answer.

In the Venter (2017) research, a lot of consumers keenly said that they understood enough about date labelling for them to be able to make informed consumer decisions, however, when tested objectively they weren't able to show that knowledge.

The outcome from the focus group discussions reinforced the fact that consumers don't know date labeling as well as they think they do and it also highlighted the point that confusion in terms of Date Labelling Theory, the difference between sell-by, use-by and best-before dates, is typically the reason for misinterpretation which ultimately leads to wastage (Venter, 2017).

However, another key element that came out in this research is that the main barriers that hinder sustainable consumption is poor planning and purchasing. While date labeling features in the top five reasons for wastage, poor planning and purchasing ranked as the most worrisome (Venter, 2017). If a consumer is strict with following the use-by dates on dairy products, bulk buying is not advisable in order for what is bought to be consumed within the date label guideline. From a brand, supplier and retail perspective, this will also help that products are produced and dispatched in the correct quantities as consumers will be buying enough for their consumption patterns.

It will be highly beneficial for a brand like Clover to educate those that consume its product of date labeling and its aims to curb food wastage. This research will look into what the Clover brand is doing in this area of controlling food wastage at household levels and educating consumers? How are they impacting lives of their customers for the better and ultimately contribute to the reducing food waste?

While there have been many studies on food wastage, there hasn't been a clear view on some of the brands and their efforts to help consumers and the world at large curb the increasing levels of food waste. In this section the focus will be branding and business when it comes to food wastage. From the literature reviewed, we've ascertained that there is a big gap in consumer education around food wastage and the use of "sell-by" and "use-by" dates. While there have been research papers calling for consumer education around date labelling, there hasn't been pressure put on producers to thoroughly assess their product labels and how their current state contributes to the food wastage crisis. It is important that brands know that to help alleviate consumer related food waste, a certain type of messaging strategies are required, viral approaches, and target consumer perceptions (Aschemann-Witzel, 2015).

According to Havas, a meaningful brand is defined by its impact on personal and collective wellbeing of consumers, and its functional benefits. Its communication needs to educate, inform, entertain, inspire, reward and help. Be a great driver of personal wellbeing and therefore lead to meaningfulness (Havas Group, 2017).

We will now examine the five principles above used by the Havas Group to determine a brand's meaningfulness (Havas Group, 2017) against the chosen brand Clover. This theoretical framework will highlight the gaps, if any, from Clover as a big player in the dairy industry and its possible influence in food wastage.

Like most corporates Clover also has a "green initiative". Clover's green initiative, which is their environmental sustainability ("green") strategy, recognises its responsibility to reduce, and as far as practicable, to eliminate the impacts of its business on the environment (Clover, 2020). It states that this responsibility relates not only to operations within Clover's control, but also to Clover's supply chain partners, which are recognised to be responsible for significant environmental impacts in supplying Clover.

Through this initiative, Clover has committed to improving the environmental performance by implementing and maintaining an effective Environmental Management System (EMS) and reduce carbon footprint through measuring the carbon footprint associated with operations and key elements of the supply chain and set annual targets for reducing Clover's overall climate impact.

Reducing water usage across operations by monitoring water usage and setting targets for reducing water consumption is also a focus for Clover and as well as limiting the generation of solid and liquid wastes and the impact of their disposal through monitoring waste sent to landfill and set targets for reducing waste to landfill. Clover is also looking to minimise returns and damages and the impact thereof on the environment. It aims to reduce energy consumption by monitoring energy usage and set targets for reducing consumption, optimise the use of primary and secondary packaging, reduce the impacts associated with milk supply through continuous monitoring of wastage and implement and lastly inform supply chain partners on activities to reduce environmental impact and partner with them to reduce their own impact (Clover, 2020).

While this strategy is good, its sole focus is on the environmental impact of waste management. Little has been said or done for consumers specifically. Clovers fails to address how it has been, or planning, to educate and support consumers of its products to minimise household waste. For a brand a big as Clover, it has a greater chance of influencing consumer behaviour when it comes to wastage as it has been a loved and trusted brand for over 100 years. Also, access to vast consumers. It has a good combination of touch points – advertising, posters, billboards and prominent exposure of products at retail outlets.

Its current green strategy is expected to translate into a meaningful impact to the company's profits, however, more should be done at consumers level in order for the brands efforts to be recognised by its users. That way it will gain retail sales level start working towards being a meaningful brand to its consumers. For its green strategy, Clover has set itself reduction targets as follows - water consumption 5.0% decrease; electricity consumption 6.1% decrease; and waste recycled 30% increase. It believes that reducing the environmental, as well as the financial impact, of rising resource costs will allow for it to continue to be a sustainable business in all aspects.

While Clover can be classified as a meaningful brand by most, it can be gain more from adding customer education around about this global phenomenon.

What is seen from the Clover brand evidences that the chosen topic will not only gather insight for those advocating for reduction of food waste but highlight to the brand as well of the missed opportunity to be an even better meaningful brand.

Standardising expiration dates and education consumers is one of the most cost-effective changes that can be made to household level waste.

The Dating Game report, published by the Harvard Law School Food and Law Policy Clinic (FLPC) and National Resources Defense Council (NRDC), also confirms the need for consumer education as most consumers are confused over expiration date labels. And there is little distinction between quality and safety of food (Brown, 2016).

What is becoming evident as more literature is reviewed, most foods, when stored properly, can be safe to consume for some time past the indicated expiry date, but this information is hardly communicated to consumers (Brown, 2016).

The research will further look to explore if there is indeed to standardise date labelling and follow that up with robust consumer education in order to fight household food waste.

5. Research methodology

The research paradigm chosen for this research is interpretivism.

Interpretivist research is about giving a view on a situation and assessing it in order to give insight into the way in which a group of certain individuals make sense of their situation or the phenomena they encounter. It is a qualitative research approach (Flick, 2014).

Qualitative research analyses individual meaning on issues, events, and collects non-standardised data and examines texts and images rather than number and statistics (Flick, 2014). This fit well with how data will be collected for this research. The focus will mostly be on how each individual or household understands the expiry dates on food packages, particularly on dairy products.

Qualitative research is also multi-method in focus, whereby it involves an interpretive, naturalistic approach to issues at hand (Denzin & Lincoln, 1994). It is more concerned with various perspectives because by truest definition, it is an umbrella term covering a range of interpretive techniques and looks to describe, decode, translate, and then come to terms with the meaning, not the frequency, of certain phenomena in the social world (Van Maanen, 1979).

The main reason for choosing this research approach is that there are a few benefits of using it. Firstly, qualitative research gives detailed description of participants' feelings, opinions, and experiences; and interprets the meanings of their actions (Denzin, 1989). Qualitative approach will provide deeper insight into the issues that consumers face when it comes to the use of dairy products, the packaging and their understanding of food waste. Do they think it can be prevented and what's their role versus that of the producer?

Another benefit is that, qualitative research is an interdisciplinary field, encompassing an array of epistemological viewpoints, research approaches, and interpretive techniques of understanding human experiences (Denzin & Lincoln, 2002).

From the viewpoint of epistemological position, any language assessment cannot be set apart from context, culture and values of where it was used (McNamara, 2001). Which is why the language assessment researchers employ qualitative research methodology for focusing the issues that need an analysis of content-related variables such as the influences of test-takers' characteristics on test performance, the strategies used to respond to assessment tasks, and so on (Tsushima, 2015). For this research, it is important to set context in of why there's a need to assess understanding of food labelling. Look at the way in which this fit into the whole picture of food wastage and how brands or producers influence this chain.

What's also worth stressing is that, the interpretivism research approach is regarded as an ideographic research, the study of individual cases or events (Kelin & Myers, 1999); and it has abilities to understand different people's voices, meanings and events. This is important because not everyone using dairy products will have the

same experience or frustration. While some might have a challenge with labeling, some might have problems with the package type, however, both instances leading to wastage ultimately. That's also not taking away the fact that there are some consumers that might be working hard to limit wastage, by buying the exact quantities they need and using them before the "use-by" "sell-by" dates to ensure that there is no wastage. However, these same consumers could still appreciate a bit more education around product shelf life, so they don't have to feel the pressure of constantly checking product expiry dates.

To ensure that the various experiences of consumers are captured, data will be collected through focus group sessions. For this approach, it is important to observe behaviour and reasoning from participants. In interpretivist research approach, researchers interact with the participants directly during data collection through interviews, so data collection is subjective and detailed.

Lastly, qualitative research design has a flexible structure as the design can be constructed and reconstructed to a greater extent (Maxwell, 2012). Thus, the thorough and appropriate analyses of an issue can be produced by utilising qualitative research methods, and therefore the participants have sufficient freedom to determine what is consistent for them (Flick, 2011). As a result, the complex issues such as food wastage can be understood easily. Food wastage happens as various levels and so it's important for an individual/household to understand their contribution to the big picture and understand their role in alleviating the problem.

6. Research design

Given the limitations due to the current Coronavirus challenge globally, a focus group will be conducted via Microsoft Teams which is an online platform. There are many ways to explain what a focus group is. According to Creswell (2014), the researcher enables a casual discussion with at the very least six to eight participants. These discussions contain unstructured and commonly open-ended questions which are meant to elicit views and reviews from the participants.

Simply explained, the participants are decided on by the researcher to either dispute or share a comment on the said topic.

Individuals in focus group settings are commonly more willing to volunteer information than when they are in a personal interview set-up because they feel less self-conscious about sharing their reviews, and in so doing, encourage others to reveal their evaluations and thoughts (Babbie & Mouton, 1998).

The advantages of focus groups are that a group is beneficial for when participants cannot be directly observed, they can also provide historic information and a researcher has better control over the line of questions (Creswell, 2014).

There are also boundaries of focus groups are. According to Creswell (2014), focus groups give secondary information filtered through the views of interviews and they provide information in a designated place rather than the natural field setting. The researcher being there during the session may cause biased responses and not everybody is equally articulate and perceptive.

6.1 Population and sampling

According to Solomon, Marshall & Stuart, (2009) sampling is about selecting respondents for the research. It can also be described as a process that uses a small number of items, or a proportion of items, to draw a conclusion concerning the whole population. This may be considered to be a piece of the larger population (Zikmund, 2003).

For this research, the population selected will be from Gauteng and the target being the Johannesburg region. The sample will be made up of 10 individuals between the ages of 25 and 45. These will be individuals with buying power, employed and make purchases of dairy products on the regular basis. The brand chosen for this research is a popular brand, so the target will be mostly on consumers that purchase, or have in the past, the dairy products from Clover.

There are various ways that will be considered for obtaining participants for this research. It will either be by approaching a range of organisations formally or develop a snowball sample through work-related or informal contacts. There are currently a number of constraints due to the global pandemic, therefore, the selection of the sample will not a physical contact approach.

Upon identifying the participants, permission will be requested from them to gather the information required in order to carry out this research. Throughout the process, the appropriate standards of confidentiality of sample, willingness, and free participation of all respondents involved is maintained. The objective and reason for the research will also be discussed and clarified with participants.

Data collection

For the purposes of this research, the researcher will conduct online focus group discussion. Data from the discussion will be captured using a recording and by means of notes done by the interviewer during the session. The discussion will be semi-structured and open-ended. Random sampling will be used and various individuals identified for the discussion. The time frame of the focus group is expected to be no longer than 45 minutes.

Research discussion guide

The following themes have been formulated to address the goals set out.

- What is your understanding of the use-by date on food labels?
- What do you think the sell-by date indicates?
- What does the best-before date signify to you?
- What do you think is the purpose of all these dates?
- Do you think there is a reason why dairy products prefer to use use-by date instead of the other two?
- Why do you use/evaluate the use-by on dairy products?
- With use-by date being the most common in dairy products, to your understanding, do you think it's the best guideline to use?
- Do you consume any dairy products after the use-by date and why?
- If not, at which stage do you throw out the products? Before the stipulated date? On the exact date or after?
- Do you think the packaging allows for these dates to be visible enough for you to engage with them constantly?
- Do you believe producers of these foods properly explain/educate on the actual meaning of these date and what actual shelf life of the various dairy products?

Validity and reliability of the study finding

Unlike quantitative research, where statistical methods can be used to determine validity and reliability findings in research, qualitative researcher are required to design and incorporate strategies that can assure the 'trustworthiness' of the findings.

For this research, the following strategies will be incorporated:

As the researcher is also a consumer, it is important to account for personal biases which may have influenced findings. As Clover is a well-known brand, it will be hard to find a research that has not come in contact with the brand in some way or consume dairy product. Secondly, the researchers view on household food waste as a result of dairy product could be different to that of the respondents, therefore it needs to be accounted for.

As this is a random sample selection, it is important to acknowledge biases in sampling and ongoing critical reflection of methods to ensure sufficient depth and relevance of data collection and analysis.

As it is an online focus group, there is a strong need for meticulous record keeping, in order to show a clear decision trail and ensure that interpretations of data is reliable and transparent.

An inclusion of verbatim descriptions of participants' accounts will also be added into the research to support findings. There will also be a demonstration of clarity when it comes to thought processes during data analysis and following interpretations. Data from each respondent will be noted and compared, look for trends and similarities, and draw conclusion from that.

Feasibility of study

Currently the main constraint of this research is the global pandemic that will not allow for physical set up for the focus group sessions. Although there are virtual means to conduct the research, which is what will be used in a form of Zoom Application, connection can pose a threat.

Participants might not all connect at the same time due to connectivity issues, or even electricity constraints. However, to prepare for this, there will be more than one session booked and the researcher will keep to the allocated discussion time to avoid missing key information from respondents.

Ethical issues

For this research, certain ethical considerations will be taken into consideration. Firstly, all participants of the online focus group will be treated with respect and courtesy. A strategy that will be used is that of 'informed consent', whereby all participants will be given a proper explanation of the aim of the research and methods that will be applied.

The will also be an assurance of the confidentiality and anonymity of individual participants, and before the discussion are recorded, consent will be requested beforehand.

6.2 Research limitations

Sample size

The generalizability of the research is limited by the sample size being so small when considering the population of South Africa is 59.62 million and that of Gauteng is 15.5 million (Statistics SA, 2020). The sample size of 10 respondents chosen for this research might not be enough to get an accurate view of the general population. However, it can provide sufficient information for a brand to get an observation concerning the problem statement. Therefore, findings of this research cannot reflect the views of all consumers (or majority) in South Africa as the sample is small and focuses in one area (Johannesburg).

Method

The reliability of the data may also be impacted by the method used for the research. Although the method for the research is good (focus group), there are limitations that may arise in that respondents may feel the need to alter the actual responses because it is a recorded session and also based on what they are hearing during the conversation. They might be uncomfortable to own up to not knowing their contribution to food waste or understanding date labels.

Data collection process

The presence of the researcher has the potential to influence the responses of the participants. So, it will be important to stay as neutral as possible and allow participants to give their own views.

Equipment

Due to lack of physical interaction the accuracy of respondent observation might be constrained as this will be a virtual discussion. The session will require the participants to have a device of sorts in order to take part. This might limit the number of people agreeing to take part, however, because Zoom App is loadable on smartphones this limitation could be bypassed. And the ability of the researcher to read body language and expression is limited in these platforms.

Time

This research will need to be turned around quickly, hence the smaller sample size and chosen data collection method.

Age of data

Due to limited time for the research, there will be use of secondary data. More recent studies will need to be used to ensure that this research is working on current trends and not dated information.

7. Anticipated contributions of the study

This research not only aims to understand the consumer behaviour when it comes to household waste but will offer an opportunity for the brand and broader dairy industry to understand what poses a challenge for their consumers. The long-term ultimate achievement of this proposed research will be:

- It will lead to an enhanced understanding why consumers waste dairy products.
- Help producers delve into the challenges such as date labelling to help reduce the food waste level.
- Guide the brand in planning its distribution based on trends and volumes of consumption.
- Help consumers understand what food waste is and the effect it has on the environment.
- Aid in the development of educational strategies between brand, its distributors and possibly regulatory bodies.
- The brand can develop creative ways of retaining consumers by showing them that it cares about food waste in the country.

8. Data analysis, findings and interpretations

After a focus group was held for the research purposes pertaining to the study, the data analysis, findings and interpretation thereof will be discussed by analysis the data, looking at findings and interpretations of the general insight.

This section will use both a narrative and graphical format, in the form of pie charts, in order to record and reflect the data findings from the focus group that was done.

The study discloses that in terms of age, 50% of the respondents were over the age of 30 (range 30-33), while 30% were just over 25 years of age (range 25-26), and 20% were over 40 years (range 41-44).

Of these respondents, in terms of gender, 70% are female and 30% are male.

General insights and findings from the research

From the comprehensive research that was conducted, the findings reveal that most of the respondents are confident in their understanding of date labels. However, an overwhelmingly 60% said more education is required as they use what they know (knowledge they googled themselves but never taught) and stand to be corrected as to what these dates actually mean.

None of the respondents indicated that they believe dairy products could have a shelf life longer than the used by date. And only 10% said they have used some dairy products (mostly cheese) post the used-by date, but also only cautiously not because they believed it can stay longer. Another 10% said they have in the past, but it is not something they do often.

Reasons for discarding products that already show used by date were mostly health related, majority (70%) mentioned not wanting to get sick from eating expired dairy.

Packaging was also criticized, with at least 50% of the respondents saying the print of the date label is sometimes not as legible as they would ideally like. Below is the snippet of common responses recorded when participants were asked to interpret the date labels:

Areas	Common responses
Sell-by date	The last day on which the dairy product should be displayed at the vendor for retail purposes.
Use-by date	The product should be fully used and consumed by the date noted on the packaging.
Best-before date	The recommended date before a product start to lose its quality.

Analysis

From all those that participated in the focus group, 80% said they don't every use dairy product after use-by date. That they believe the product has gone bad after this date whether it was opened or not. Most of the respondents cited health concerns as being the reason for discarding products as they believe that the way the diary product is produced and stored can cause harm to them if eaten post the use-by-date.

Meanwhile, 10% said they do sometimes or have in the past consumed dairy products after use-by-date. They indicated that they go by taste or visual appeal of the product to determine if indeed it should be discarded. However, even when doing this, they are strict with the period they keep the product for after the stipulated date. Most said they try consuming it within 2 to 3 days as keeping it longer might spoil it further. Only 10% didn't show doubt or concern about consuming dairy products post use-by-date, stating that they only throw away of it taste bad and most often try not purchase more than what is needed in the house.

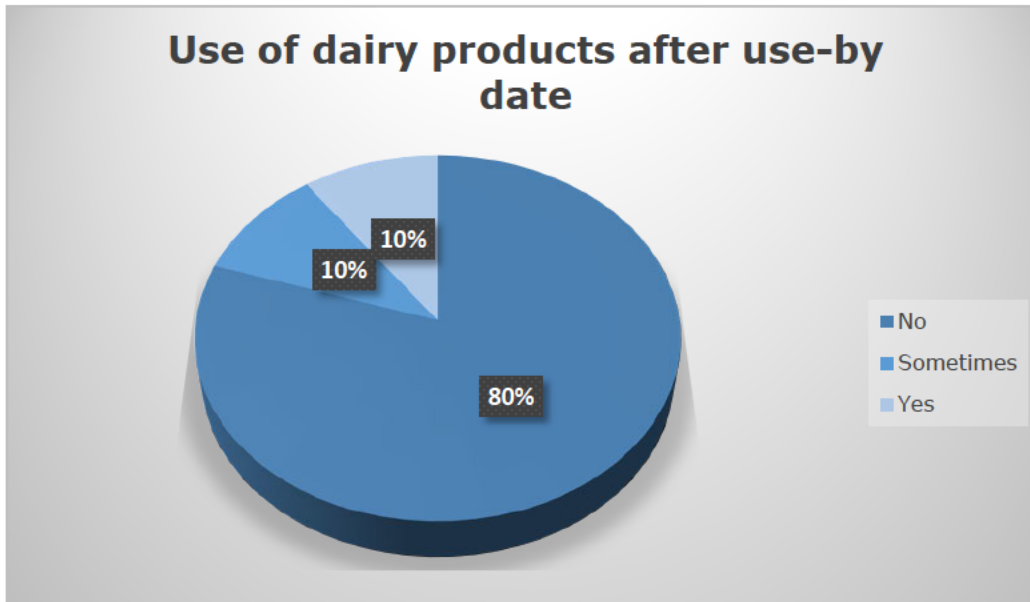


Figure 1: Breakdown of individuals that do consume dairy products beyond sell-by-day and those that don't.

What was also interesting from analysis the information provided by the participants, most of the them indicate that they prefer to have the use-by date only on the products and not the other two options.

This is because they believe it is clearer to them and easy to understand, unlike the best-before and sell-by dates.

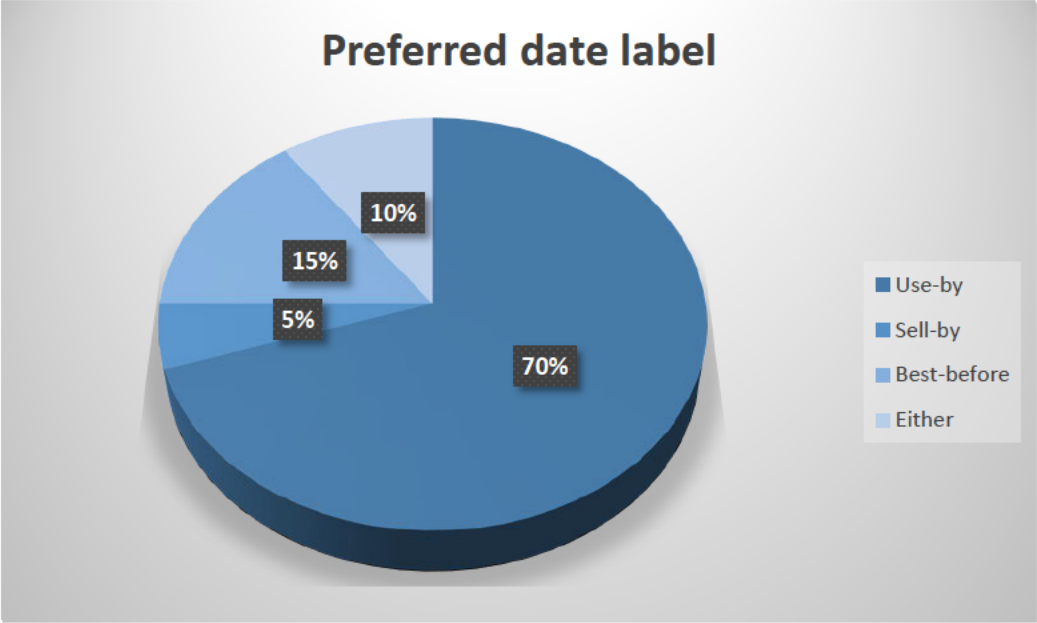


Figure 2: The preferred date label according to the participants in the focus group.

The majority of the respondents believe that the use-by-date is the best to measure the quality and safety of products. Those that responded to not consume foods after this date all indicated that this is certainly the last day any dairy product can be consumed and they discard of whatever is left, even unopen, the immediate day after the use-by date. However, a conversation also ensued among those that do wonder about the actual meaning of these dates and the effects that our beliefs around them has had on waste. A respondent raised that consumerism has guided humanity towards wasteful lifestyles. That consumers are spoilt for choice, and buyers often choose the “freshest” products by default i.e. one with the furthest use-by-date, and as a result, tonnes of food gets wasted worldwide including on retailers’ shelves. When a consumer has bought a tub of yoghurt with a use-by-date 4 weeks from date of purchase, they are likely to forget it than someone who have purchased it with a 7-day use-by-date stipulated as they only purchase when necessary.

Packaging

When asked about the packaging of dairy products and how it affects their ability to view these dates, a majority said date printing on products are often obscured, printed unclearly, printed too small, placed where they find it with difficulty, generally not clear and visible enough. Seventy percent of the participants said they always struggle with finding dates, resulting in them taking longer with their shopping and because they are always so cautious of eating “expired” foods, they try search for dates further than date of purchase. While the rest said with most of the products that they buy often, they now know where to look.

Not that it is greatly visible, but they’ve made a conscious choice to meet the producer halfway and figure things out themselves.

Education

At least 70% of the participants say they would appreciate it if the producers and retailers had some educational campaigns around date labels, particularly shelf life of foods and how to always store food correctly. They indicated that households all run on their own research and understanding but that hasn't prevented food wastage or reduced it any way. There is no coordinated effort between households, retailers and producers when it comes to fighting food wastage, everyone is doing what they think is best.

A participant said, *"We've all ended up assuming what these terms mean but aren't even sure we are all correct. Some education could help."*

While 30% said it's the buyer's responsibility to educate themselves and understand what these date labels mean. They should buy what they need and use before the use-by-date if that is what they are comfortable measuring quality with.

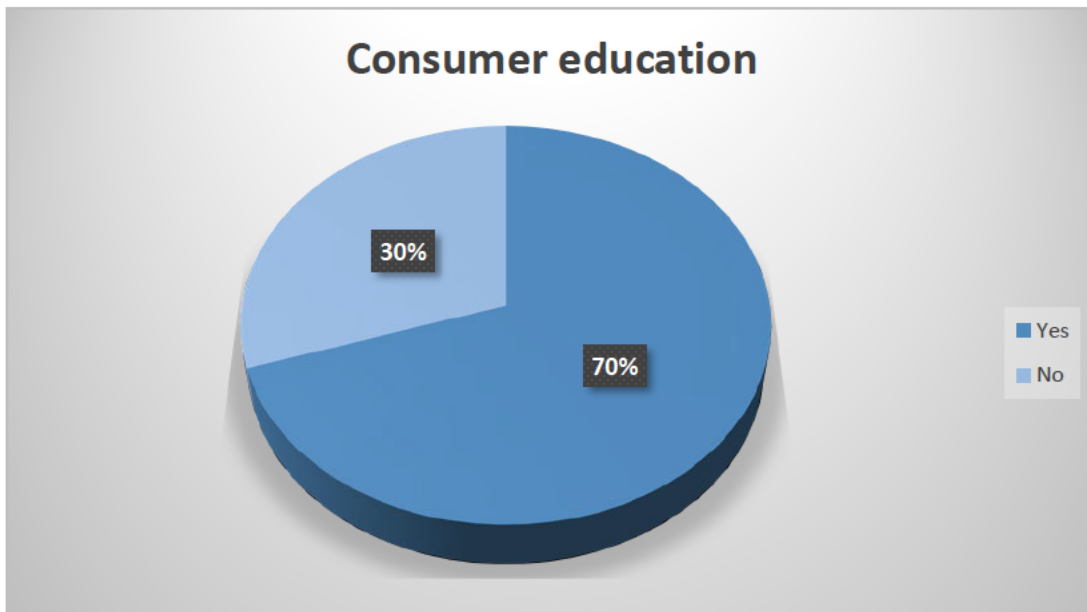


Figure 3: Majority of participants are in favour of educational campaigns by producer on date labelling.

9. Conclusion and recommendations

The research presented some limitations that hindered the overall success of the study. It focused on one geographical area being Johannesburg, Gauteng, therefore excluded other areas of South Africa. Consequently, the study can only be a reflection of a small portion of Gauteng and not the whole country. In addition, this limitation also implies that what would be recommended from this research might not be effective for the other areas as the problem investigated might not be seen as a problem to others in certain areas. If this problem around date labelling is to be investigated further, a greater geographical area should be covered with a greater population and sample size, this will allow for the data to reveal a more accurate reflection of South Africa. A second limitation was the type of data collection method used. The data collection was one focus group and that was held online, technology challenges presented themselves as there wasn't a time or place to do a physical session due to the pandemic. This collection method was too narrow for the depth that is required from this study. For future studies it would be suggested that multiple methods are used to allow for more reach and focus groups are not online to avoid technical difficulties.

The ethical considerations and the wellbeing of the participants that were used in the study were strictly adhered to. Their identities remain anonymous, and the questions asked were unbiased and not offensive to the participants. Throughout the study there were no complaints or concerns brought forward by any individual involved. The researcher also remained unbiased when analysing and interpreting the data, which means it can be said that the findings are accurate and reliable, reflecting the data recorded by participants.

The study highlighted some interesting insights. Firstly, and the most important insight was that the majority of individuals that participated were very confident in their interpretation of the date labels, however, also wondered if they had actually interpreted these dates correctly. They indicated a great desire for producers to educate more around these in order to help them waste less.

One of the participants said, "I don't think that dairy producers explain the dates well for consumers. It would be meaningful if they did small drawings or illustrations that explain to consumers what the dates actually mean."

Another said, "producers should make every effort to present important information incontrovertibly towards treating customers fairly."

They strongly spoke against the way producers show/print these dates on packages, stating that it's hard to read and find.

Respondents were also not aware of how much they are, and that these factors (understanding of date labels and packaging) could be big contributing factors to household wastage.

It can be concluded that, while consumers have some understanding of date labels, they have very little knowledge around the shelf life of most dairy products and the safety of consuming some products post the use-by-date. They don't see these dates as only guidelines but definite instructions that they must discard products if not used post the use-by date. It is evident that there is a direct link between wastage of dairy products in households as a result of date labeling and packaging.

Recommendations

In the light of the findings and conclusions drawn, the following recommendations are suggested:

1. Since consumers are saying there needs to be more education from producers, a brand like Clover will need fill the gap and be a meaningful brand by involving consumers in their waste reduction plans/campaigns and not keep it at production level only.
2. Retailers would need to also be pulled into the waste management drive as they are the direct link between clients and producers.
3. Stock management would need to be worked on between retailers and producers as many respondents indicate that if the retailer puts on the shelf a product with a date that 4 weeks away, they are likely to take that than one that's closer. This results in consumers storing foods and forgetting about them because they are not expiring soon.
4. The above also contributes to retail level food waste because all those with date closer will have to be discarded.
5. A review of packaging is required, and the printing of date should be more visible and bolder.
6. Lastly, possibly a note that also indicates that if a product hasn't been opened yet by this date it could still be okay to consume, individuals should check before throwing food away.

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ADDENDUM

Participant consent form

Exploring food waste in the dairy industry and the influence that date labelling and packaging have on food waste.

Consent to take part in research

I..... voluntarily agree to participate in this research study.

- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.
- I understand that participation involves being part of an online based focus group.
- I understand that I will not benefit directly from participating in this research.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
- I understand that disguised extracts from my interview may be quoted in the research document.
- I understand that if I inform the researcher that myself or someone else is at risk of harm, they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.
- I understand that signed consent forms and original audio recordings will be retained until the exam board confirms the results of their dissertation.
- I understand that a transcript of my interview in which all identifying information has been removed will be retained for a certain period from the date of the exam board.

- I understand that under freedom of information legalisation I am entitled to access the information I have provided at any time while it is in storage as specified above.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Researcher: Kgomotso Mathe

[REDACTED]

Academic supervisor: Mbali Rametse

Signature of research participant

Signature of participant Date

Signature of researcher

I believe the participant is giving informed consent to participate in this study

Signature of researcher Date

Interview Schedule - discussion guide

Opening

1. Establish Rapport - My name is Kgomotso Mathe, I will be facilitating the research discussion today regarding food waste when it comes to dairy products. I hope you will find this to be an informative session as we are here to share our views and insights on the topic at hand.

2. Purpose - This session is to gather information for a post graduate research assignment, looking at food waste.

3. Motivation - I hope to use this information to help reduce food waste at household level and possibly get dairy producers to look into their contribution when it comes to food waste.

4. Time Line - The focus group should take about 60 minutes.

(Transition: Let me begin by asking you some questions about where you live and your family)

- What is your understanding of the use-by date on food labels?
- What do you think the sell-by date indicates?
- What does the best-before date signify to you?
- What do you think is the purpose of all these dates?
- Do you think there is a reason why dairy products prefer to use use-by date instead of the other two?
- Why do you use/evaluate the use-by on dairy products?
- With use-by date being the most common in dairy products, to your understanding, do you think it's the best guideline to use?
- Do you consume any dairy products after the use-by date and why?
- If not, at which stage do you throw out the products? Before the stipulated date? On the exact date or after?
- Do you think the packaging allows for these dates to be visible enough for you to engage with them constantly?
- Do you believe producers of these foods properly explain/educate on the actual meaning of these date and what actual shelf life of the various dairy products?

(Transition: Let me briefly summarize the information that I have recorded during our interview.)

Closing

1. Summarise – From our discussion today, these were the recurring themes...
2. Maintain Rapport - I appreciate the time you took for this interview. Is there anything else you think would be helpful for me to know? If not, thank you for the time and insights shared today.